

AP9982

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of: Zeibig et al

German Appln No.: 10062431.6

Priority Filing Date: 18/Dec/2000

Serial No.:

Group Art Unit:

Filed: Herewith

Examiner:

For: Hydraulic Piston and Process for its Surface Treatment

Attorney Docket No.: AP9982

Paper No.

Commissioner of Patents
Washington, D.C. 20231

CERTIFICATE OF MAILING/TRANSMISSION (37 CFR 1.8(a))

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PRELIMINARY AMENDMENT

Dear Sir:

Please amend the application as follows prior to examination on the merits.

IN THE CLAIMS

Please cancel claims 1-7 and add the following new claims.

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8. (New) Hydraulic piston, in particular brake piston for an automotive vehicle brake, with a thermochemically treated surface, with several superposed layers at the piston surface, comprising:

a layer of oxide that is arranged directly at the piston surface and has a thickness of at least $1\mu\text{m}$,

a connecting layer which is arranged beneath the layer of oxide and is mainly composed of nitrides,

a diffusion layer that is arranged beneath the connecting layer and includes nitrogen in a dissolved condition or separated nitrides, wherein the connecting layer has a minimum thickness of $8\mu\text{m}$.

9. (New) Hydraulic piston as claimed in claim 8, wherein the connecting layer includes capillary tubes which are respectively closed at the piston surface by portions of the layer of oxide.

10. (New) Process for surface treatment of a hydraulic piston, in particular a brake piston, comprising the following procedure:

a nitrocarburization of the piston in a gaseous medium;

a postoxidation of the piston in a medium yielding oxygen O_2 ;

a machining of the oxidized surface for adjusting the surface quality.

11. (New) Process for surface treatment of a hydraulic piston as claimed in claim 10, wherein the nitrocarburization of the piston is carried out in several stages:

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a first stage wherein the piston is exposed to a first gaseous medium comprised of ammonia NH_3 , carbon dioxide CO_2 , and nitrogen,

a second stage of nitrocarburization wherein the piston is exposed to a second gaseous medium comprised of ammonia NH_3 and carbon dioxide CO_2 .

12. (New) Process for surface treatment of a hydraulic piston as claimed in claim 10, wherein the temperature during the nitrocarburization process amounts to maximally 530°C .

13. (New) Process for surface treatment of a hydraulic piston as claimed in claim 10, wherein an ambient medium separated from ammonia NH_3 is provided for the piston before the postoxidation.

14. (New) Process for surface treatment of a hydraulic piston as claimed in claim 10, wherein said machining is effected by a polishing or brushing operation.

REMARKS

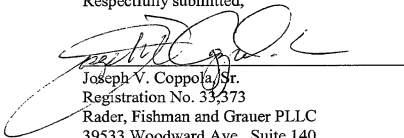
Prior to a formal examination of the above-identified application, acceptance of the new claims and the enclosed substitute specification (under 37 CFR 1.125) is respectfully requested. It is believed that the substitute specification and new claims will facilitate processing of the application in accordance with M.P.E.P. 608.01(q). The substitute specification and new claims are in compliance with 37 CFR 1.52 (a and b) and, while making no substantive changes, are submitted to conform this case to the formal requirements and long-established formal standards of U.S. Patent Office practice, and to provide improved idiom and better grammatical form.

The enclosed substitute specification is presented herein in both marked-up and clean versions.

STATEMENT

The undersigned, an attorney registered to practice before the office, hereby states that the enclosed substitute specification includes the same changes as are indicated in the mark-up copy of the original specification. The substitute specification contains no new subject matter.

Respectfully submitted,

A handwritten signature in black ink, appearing to read "Joe V. Coppola, Sr.", is written over a horizontal line. The signature is fluid and cursive.

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